

Hobbies

WEEKLY

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A SIMPLE HOME-MADE ROWING MACHINE

ROWING is a pastime that exercises all the muscles in the body, but unfortunately, it is not everybody who can get out on the river in a racing skiff. But any handyman can rig up this simplified form of rowing machine that will give him plenty of healthy exercise without the necessity of leaving his own bedroom.

General Dimensions

A plan and side elevation of the framework is given at Fig. 1. The two long sides are 5ft. long, 3ins. wide and 1in. thick, and these have three bottom rails (1ft. 9ins. long by 1in. thick) screwed to their lower edges so the inside edges of the long rails are 1ft. 1in. apart. Of the bottom rails, two are 4ins. and the other 8ins. wide, the positions in which they should be fixed being clearly shown on the drawing.

In addition to these bottom rails, two 1ft. 4ins. long, 4ins. wide and 1in. thick rails are set across the top of the framework, their ends fitting into $\frac{1}{2}$ in. deep grooves in the long sides. To give the framework a neater appearance the ends of the long sides are rounded over as shown on the elevation.

If the rowing machine is to work

properly it is very necessary that the framework described above be made as accurately as possible, for the sides form a track along which the wheels of the sliding seat can run.

The Seat Board

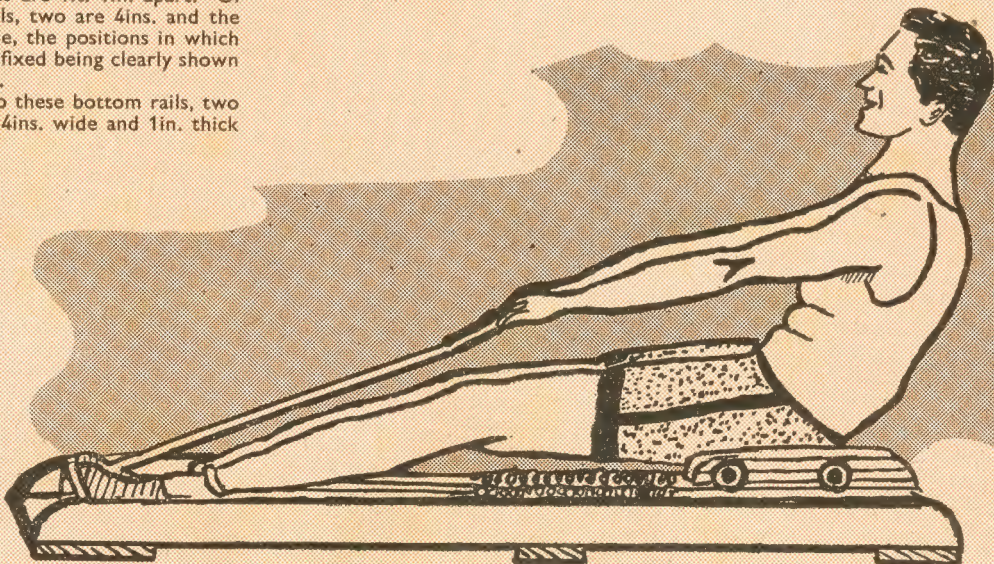
The seat is of 1in. thickness and is simply a piece of wood 10ins. long by 12ins. wide. If it is not possible to get the full width in one board, two or more boards may be used provided the edges of adjacent boards are planed dead square so that the timbers may be glued edge to edge.

A three-sided framework of 1in. square wood is screwed to the top of the

seat from underneath, two of the strips running the 10ins. length of the seat and the third the width, the outer edges of all strips being kept flush with the outer edges of the seat.

Runners

Four wheels are fitted to the seat, each being made up of two circles of wood. The larger circle is $2\frac{1}{2}$ ins. in diameter and $\frac{3}{4}$ in. thick, and the smaller $1\frac{1}{2}$ ins. in diameter and $\frac{1}{4}$ in. thick. The smaller circle is screwed over the centre of the larger with four well countersunk screws. A centre hole is drilled through the composite wheel, and the wheels are then screwed into place.



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There are two wheels on each side of the seat, their securing screws running into the edge of the seat bottom. When screwed home these flanged wheels should enable the seat to run freely along the long rails of the framework. Fig. 2 shows two elevations of the wheel.

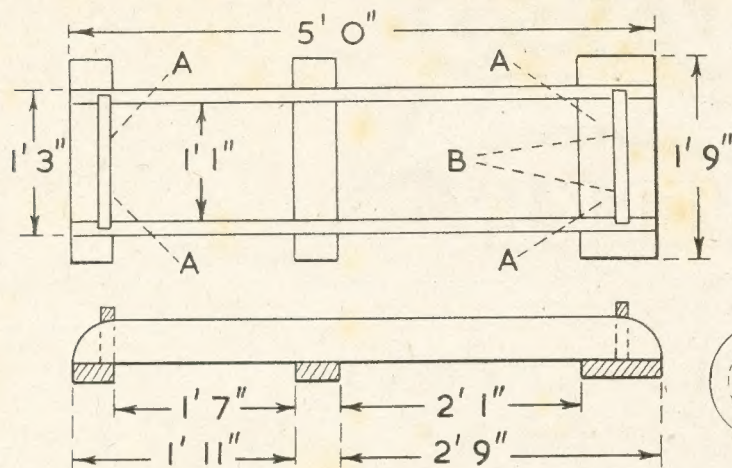


Fig. 1—Plan and side view of main frame parts

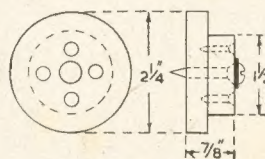


Fig. 2—The flanged wheels

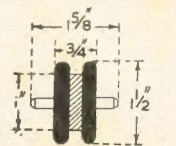


Fig. 3—Pulley wheels

Pulley Wheels

Two pulley wheels are also needed. Each wheel is cut from three circles of $\frac{1}{2}$ in. wood, which are then screwed together. A $\frac{3}{8}$ in. diameter hole is drilled right through the centre of each pulley, and a $1\frac{1}{8}$ ins. long piece of $\frac{3}{8}$ in. diameter mild steel is tapped through this hole to form a spindle (see Fig. 3).

The pulley wheels are fitted into a bracket, each bracket being made from a piece of reasonably stout metal $3\frac{3}{8}$ ins. long by $1\frac{1}{2}$ ins. wide. The outline is filed to the shape given at Fig. 4, and at the positions indicated two $\frac{3}{8}$ in. diameter holes are bored for the spindles, and four $\frac{1}{4}$ in. diameter countersunk holes for the screws by which it is fixed.

It will be seen from the drawing that dotted lines $1\frac{1}{8}$ ins. apart have been drawn across the outline, and at these

Fig. 1, there being a distance of $3\frac{3}{8}$ ins. between their inside edges. The brackets are screwed in the centre of the width of the rail and the pulleys fixed in place by means of their spindles. It will be necessary to tap each spindle back a little to enable it to be slid into its holes, and it will be found advisable to slip a thin steel washer over the spindle between the wheel and the inside of the pulley bracket at each end.

At the positions marked (A) on the plan, strong screw-eyes are fastened into the framework. Two 9 ins. long stout springs (which may be bought at an ironmonger's shop or at one of the

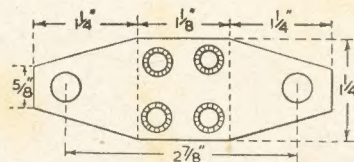


Fig. 4—The pulley wheel bracket shape

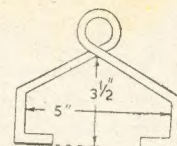


Fig. 5—Grips shape

the screw-eyes on the back vertical cross-rail. This completes the construction.

Tension Adjustment

If experience proves it necessary the cord can be shortened or lengthened as desired to adjust the tension of the sliding seat, and the flanged wheels made to run more easily by lubricating the side rails with candle grease. (237)

Felt Hat Uses

AT a recent Jumble Sale, several felt hats (good) were not disposed of, and I should like to know if there is anything you could suggest to make out of them—except toys. (E.M.D.—Ballynabola).

SALEABLE articles which can be made from old felt hats, include oven mittens and iron holders. The mittens are made like gloves, using the felt for the inner sides and any other material for the outside. Iron holders can be made of two thicknesses of the felt, backed with some fancy material. Another useful article is a floor polisher. This is a piece of wood about 5 ins. wide and 9 ins. long, with a broom handle attached. To the wood, the felt several layers thick, is tacked, tacking at the side edges of the wood. A coat of varnish to the wood makes an attractive article.

Plaster Setting

HOW do I mix a good compound for a plaque. I have tried Alabastine and plaster of paris, and each time it has not hardened. (C.T.—Upton).

IN all probability, the reason the Alabastine and plaster of paris did not set hard, is because the quantity of water used was excessive. When mixing plaster of paris for mould making, the plaster should be stirred gently into the water until it is the consistency of fairly thick cream, and then at once poured into the mould. It should then set within 30 minutes and harden and dry out in 36 to 48 hours.

Both Alabastine and plaster of paris are air hardening, and, therefore, the moulds must be open to the air, as if closed moulds are used, the exclusion of air will prevent the plaster setting. We do not know of any more suitable

material for moulds, and suggest you try the above method.

Aquarium Heating

PLEASE tell me how to make a small water heater for a tropical aquarium. (C.D.H.—Stretford).

TO maintain the temperature at the proper level is most essential in keeping a tropical aquarium; the failure of the heating apparatus might result in the loss of all your fish. Therefore you must have a reliable heater. We would not advise you to attempt to make one yourself, but to purchase a suitable make, and whether oil, gas or electricity is used, be sure the heater is to be depended upon. Electric heaters are popular nowadays with many tropical aquarists. You should be able to get a good one for about 16/-. (237)

For gifts, parties, or home use think of the possibilities of JIG-SAW PUZZLES

THE making of jig-saw puzzles of all kinds is one of the happy possibilities with the fretsaw, which should really cover a very wide range of pleasure. The completed jig-saws provide endless amusement in fitting them together, apart from the pleasure of knowing that they are homemade. Besides this individual enjoyment, there are also a number of other suggestions which should appeal to the keen fret-worker, and now that plywood is again obtainable, the opportunity is provided for several varieties of the work.

Various Uses

You could, for instance, cut a number of small ones little larger than a postcard, and have them ready for the Christmas parties. You could even provide original Christmas cards by cutting the pictures on thin plywood suitable for sending by post. You could undertake a number of them, particularly if you have a fret-machine, and offer them to suitable shops for sale.

You could cut an enormous picture with 200 or 300 pieces which will provide lasting entertainment in putting together again. You could even run a jig-saw lending library by having a dozen or 20 of the pictures distributed amongst your friends, passing them round at weekly intervals.

So, you see, the use of the fretsaw in cutting these puzzle pictures provides a wide variety of work and pleasure, and now is the time to consider the matter



A typical picture for jigsaw

with the longer evenings approaching. It may seem early to talk about Christmas, but it is surprising how quickly the time flies, and how often the work remains undone.

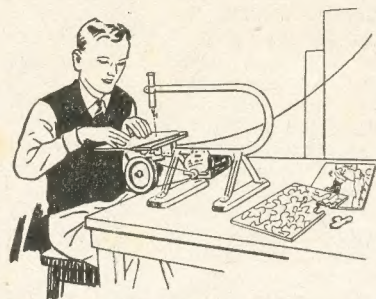
Moreover, if you are proposing to offer the jig-saws for sale, then it is essential you get the finished articles in the hands of the shopkeepers so they may be ready for early display. More of this side of the matter, however, will be mentioned later.

Essential Materials

First, let us consider the essential materials and work involved, so we may know what we have to take in hand, and plan accordingly. It is most disheartening when one has worked up a lot of enthusiasm, to find some essential part or piece of material required has not been obtained, and enjoyment has to be stood down for another day or two whilst these things are obtained.

The main materials are, of course, wood, paste, and pictures, and apart from that, you need the ubiquitous fretsaw and its companion cutting table. Not every picture is suitable, but there is at present such a wide range of them obtainable of the needed style, that their supply should not be a source of much trouble.

If you only need two or three of the pictures, then it is a simple matter to get



A factory at home with a motor fretmachine

suitable. This must be used only for the small subjects, however, because it would be impossible to keep the large picture flat in such thin material. Moreover, the Christmas card could then easily be backed with a piece of thin cardboard suitable for sending by post.

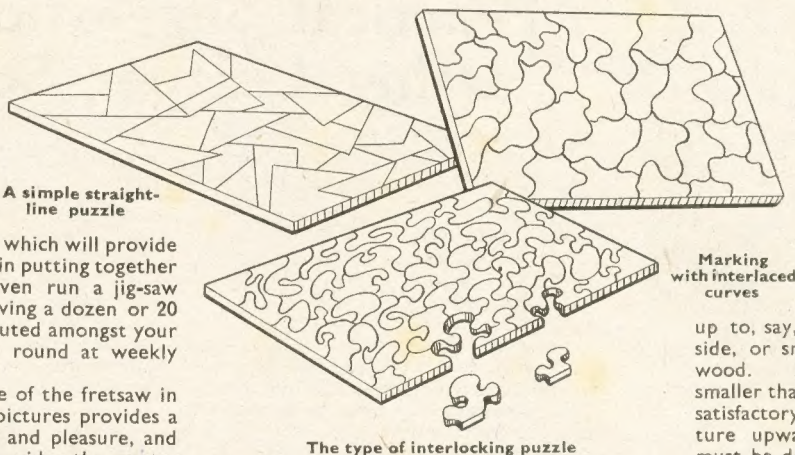
The thickness of the actual wood, however, may vary with the size of the picture. Obviously, if you have a puzzle the size of a postcard, and have cut it in $\frac{1}{4}$ in. wood, then the whole thing will be unsightly and clumsy. Normal pictures measuring

up to, say, about 10 ins. on each side, or smaller, can be of $\frac{3}{16}$ in. wood. But if they are much smaller than this, then $\frac{1}{8}$ in. ply is satisfactory. From the 10 in. picture upwards, the $\frac{3}{16}$ in. wood must be definitely employed, and for very large subjects, you can then go to $\frac{1}{2}$ in.

When we speak of large subjects, we mean those measuring up to 2 ft. on each side. These are the very large pictures supplied by jig-saw libraries, and really need a separate card table or side table for their use, because the solution of the puzzle may take a week or 10 days, and it is necessary to leave the portion solved until you can get down to it again later.

For pasting the picture down, ordinary paste is suitable, providing it does not deteriorate and go 'mouldy'. Proprietary paste is much better, and for the purpose in hand it is best to use the photo mountant obtainable from chemists, or the creamy white adhesive obtainable in tins, such as Grip-Fix. A flat, clean paste brush should be used, and the paste sufficiently liquid to apply reasonably quickly to the surface of the back of the picture itself. Have it applied evenly and not too thickly, putting the picture down immediately on to the wood.

Have a clean duster of soft material handy, and lightly rub the picture down



The type of interlocking puzzle

them from a local bookseller or stationer. If you are proposing to undertake a quantity of them, then there are firms who supply the pictures reasonably cheaply. One essential to the subject, of course, is that it must have a straight edge—whether it is square or rectangular is really immaterial.

Where to Get Pictures

The picture, too, can be a coloured subject, which is much more attractive, or just a plain black and white drawing. Very often those on the front of magazines form ideal subjects, and very often periodicals have coloured 'plates' which can be used equally well. The pictures should be bright and colourful, and printed on reasonably strong paper. If they are very thin, then there is a likelihood of the material stretching when being pasted down, and so getting distorted.

The wood should be 3-ply generally, $\frac{3}{16}$ in. thick. If you are undertaking the Christmas card type previously mentioned, then the 1 mm. plywood is more

to the wood, working outwards from the centre. If any air bubbles have occurred, lift the picture along the nearest edge, and flatten it down again, wiping towards the edging with the duster to take away the offending bubble.

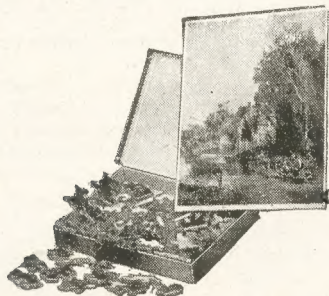
Paste on Wood

In the case of large pictures, a better plan is to apply the paste to the wood itself, and then lay the picture on to it. Hold the paper at the two corners, letting the opposite side drop into its appropriate place on the wood, and gradually lowering the rest of the paper on to the wood. Again smooth the paper out, pressing it fairly firmly. Finally cover with a piece of blotting paper and a weight, such as books, until the paste has dried.

All this can be done before actually working out the shape and style of the jig-saw puzzle itself. There are several varieties of these, each involving a certain amount of work beforehand.

Interlocking Parts

The ideal, of course, is an interlocking type of jig-saw. In this, each piece holds on to the adjoining pieces, with the result that the whole thing can be picked up by one corner and no part falls out. This is the ideal which should be aimed at, but the cutting of an experimental



A typical completed puzzle

piece should be undertaken first to try one's 'prentice hand to get a satisfactory result.

Straight or Curved

There are, however, several other styles which, although not so elaborate, are more simple to cut and equally simple to solve. Straight lines or curves can be incorporated into the picture quite easily, and an example of these is shown in the detail herewith. The lines can be drawn in pencil, and there need be no standard shape or size in their execution. The same can apply to curves, although this is perhaps a little more difficult in obtaining the graceful lines both in the pencil work and in the actual cutting.

Obviously with the small pictures, the actual pieces cut will be equally small. A piece the size of a postcard, for instance, would look absurd if only cut into, say, six pieces. If you make a first attempt by marking out your shapes in pencil on the size of paper to be used, you can tell roughly what looks satisfactory. You can see by the drawings herewith, an idea of the number which have to be cut.

The picture should be a subject in a frame, as it were. You see the style of thing in the illustration below, where a duplicate of the subject is contained with the cut pieces in a box.

Suitable pictures are frequently mentioned in our Miscellaneous Advertisement columns, or the Editor can give you the address of firms supplying them. On the other hand there must be a number of odd prints about your own home or that of your friends which could very well serve the purpose. They must, of course, be quite flat and clean—a rubber would probably take off any odd marks at present upon them.

Marking Out

A good plan is to mark out a suitable sheet of paper in pencil, altering it as required until you have got the satisfactory result. Then outline the whole thing in ink so you can trace it off on a piece of transparent paper with a reasonably hard pencil. By turning this over on to the actual picture, you can retrace the outline and transfer it quite

clearly to the subject itself. The fact that the tracing will be in reverse is immaterial. By doing the first in ink, you have the original which can be kept for future use, should the actual tracing be worn or lost.

Having traced the outline on to the paper, the next job, of course, is the cutting. As usual, the owner of the fretmachine has the advantage because he has both hands free to handle the work and operate the turning as required. Whether it is the fretmachine or the handframe, however, absolute control of the saw must be maintained. For you must remember that no part of the picture is wasted, so that any badly cut or overrun saw will show.

The Cutting

There is, of course, the advantage that if you happen to overrun a piece, you can probably turn the saw into another direction and by altering the shape slightly, make the mistake less obvious.

(To be Concluded)

Practical Suggestion for Using Leather Scraps

MOST leather workers wonder what to do with the pieces which remain when a skin has been cut up to make articles like handbags, wallets and purses. These remnants need not be wasted; here are a few hints for making useful and easily-produced articles.

Tea Cosy

A very attractive tea cosy can be completed from oblong pieces of leather. Make a pattern from wood or cardboard 3ins. by 1½ins. and use this to cut out a number of oblongs. Take five of these pieces, and sew them by their shorter sides; which will give you a strip about 14ins. long. When sewing, place the smooth surfaces face to face, and stitch about ¼in. from the edge.

Make a further strip of six pieces, then sew the two strips together, taking care to stagger them. The seams of one strip thus come in the centres of the oblongs of the other, rather like bricks are sometimes arranged in a wall. The third strip should have five pieces, the fourth six, and so on. Six strips should give sufficient height.

Construct the other side similarly, then cut the sides to the shape you desire. Sew the two sides together, smooth sides facing. For the lining, use silk or poplin, and stuff the cosy with kapok. To attach the bottom edge to the lining, you can either turn the leather over ¼in., and stitch, or you can use a cloth or imitation leather binding. There you have a tea cosy which will give many years of warm service.

By sewing leather in strips, as just

suggested, you can make other articles, like pyjama cases, shopping bags and handbags.

How about a very fine unique chess board? You can make one by using leather 2in. squares. You will need 64 pieces of leather, half of which should be black, the other half a lighter colour, say brown.

These require to be glued on a wooden base, taking care to select leather of uniform thickness, and cutting the squares carefully. If the leather is crumpled, smooth it with a warm iron before cutting. Some beading tacked round the edges of the board afterwards will impart a really handsome appearance.

Table Mats and Belts

This idea of sticking squares of leather on to a base can be used for making table mats. Make the pieces smaller—1in. square should suffice—and stick them on to stiff cardboard. Old cork table mats can be revived by surfacing them with leather in this manner.

The use of rubber solution or paste is to be recommended where heat would melt glue.

Still another way of using those odd pieces is to make fancy belts. They may be of the chain variety, requiring no stitching, or they may consist of ovals or diamonds of leather sewn together. Use strong leather that is not likely to stretch out of shape, and cut the leather very carefully, with the help of a pattern.

These few tips will serve to show you that there is no need to throw away any leather that has length and breadth of any worth-while dimension. (241)

A simple wood framework with card covering to make a SOILED LINEN BASKET

A MOST useful article this for the reception of soiled linen. It can stand inconspicuously in a corner of the bedroom, and is not inartistic in appearance in the least. As it needs very little wood, and can be made mostly from scrap materials, it is an inexpensive article well worth the making.

Details of the sides and bottom are given in Fig. 1 and diagram. Fig. 2 shows the general build up of the article. First make up a couple of light wood frames to dimensions given in Fig 1 (A). These are constructed from $\frac{1}{2}$ in. by 1 in. wood strips and joined together at the corners with the simple halved joint, shown at (C), which every reader is well acquainted with, we think.

Note that the frames differ in width, one being 11 ins. and the other $10\frac{1}{2}$ ins.

TIMBER LIST

$\frac{1}{2}$ in. by 1 in. wood strip for frames. 12 ft. run.
 $\frac{3}{4}$ in. by 5 in. board for curved rail. 1 ft. 6 ins. run.
Bottom— $\frac{1}{2}$ in. by 11 ins. by 11 ins.
Lid— $\frac{1}{2}$ in. plywood, square foot.

wide, so that when joined together, L shape, both sides will measure the same. The joints should be glued and nailed, and the two front top corners, to which the curved front rail is to be screwed, should only have nails at the spots shown, leaving the centre free for the fixing screws of the rail.

Bottom Board

The frames can now be glued and nailed together. For the bottom cut from $\frac{1}{2}$ in. board the quadrant-shaped piece shown at (B), then nail and glue the sides to it. The position of the sides is indicated by dotted lines, also the curved front rail.

This rail is cut from $\frac{3}{4}$ in. board from

the solid, a piece about $4\frac{1}{2}$ ins. wide being suitable for the job. The curve can be struck with compasses, or the bottom of the carcase can be stood on the wood and a pencil drawn round it instead. The thickness of the rail is $\frac{1}{4}$ in. so a second curve, that distance away from the first should also be struck. The rail can be sawn out with a keyhole saw if reasonable care is taken.

Fix the rail across with glue and a single countersunk screw at each end. A small wood angle block might be glued each end, if thought necessary, to strengthen the rail where it joins the sides.

The Lid

At this stage cut the lid, shown at (D) in Fig. 3. This can be cut from plywood, or good quality hardboard might serve. Lay the lid upside down on the bench, and stand the carcase of the basket on it, also upside down. See the lid extends beyond the basket about $\frac{1}{4}$ in. each side.

Then run a pencil round the top of the framing and the curved rail. This will mark on the underside of the lid the exact position for two strips of wood, shown by dotted lines in the drawing, which are to be nailed to the lid to keep the latter in place. Do not fit these strips dead to the pencil lines but $\frac{1}{16}$ in. inside them.

Cardboard Front

The sides and curved front of the basket are covered with cardboard, as in the constructional detail in Fig. 2. You can, of course, buy a sheet or two of cardboard for this part of the work, or if you feel like being economical, use the cardboard from grocers' containers,

which can generally be obtained free for the asking now.

If the sheets are not large enough to cover their respective areas, join them together, edge to edge, with tape, glued over the joint back and front. Fix the cardboard with glue and shoemaker's brads.

Covering

The whole basket, except the lid, should be covered. For the curved front there is a good opportunity to use any remnant of suitable material that may be in the reader's possession. A sufficiently large piece of cretonne, or tapestry, or indeed any stuff that would look nice and wear well. For the sides, as these stand against the wall, plain brown paper would do, or fancy paper—scrap from a roll of wall-paper would serve quite well.

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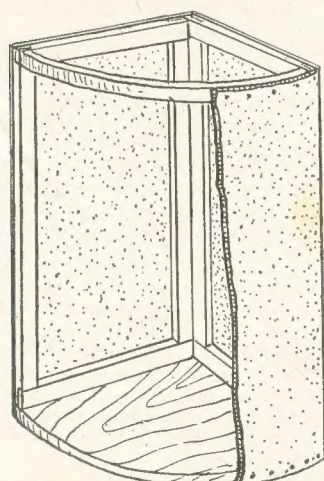


Fig. 2—Constructional details

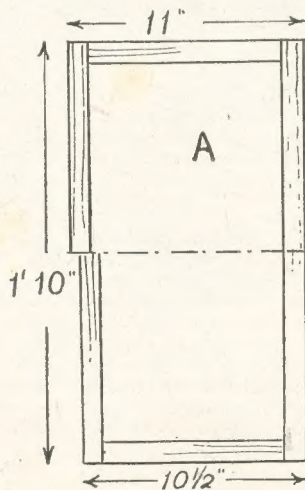


Fig. 1—Side frames and bottom, with joint detail

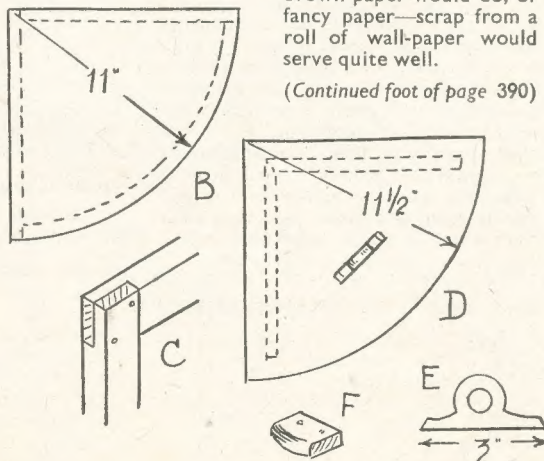


Fig. 3—The lid, feet and handle

How the handyman can alter furniture to make modern HOME IMPROVEMENTS

THE home handyman can always be busy even if the wood situation is still difficult. Panel board or composition is available, odd bits and pieces can still be picked up at the local wardrobe dealers and you will enjoy making the article as well as improvising it.

In a fairly large household we always find one mass of shoes in one room or the other. When we want them we grumble and cannot find them, and when we do find them they are all dusty and probably mildewed at the bottom due to standing too long.

A Shoe Rack

Here is a simple little gadget to make up and all you need is one of those old-fashioned towel horses which our old folks used to treasure.

As a rule these have a curved structure with three bars, two each side and one in the centre. Remove the bar from what will be the back and leave the centre and front one. Shoes will then rest with heels on middle rail and soles on outer rail (see Fig. 1). If you want more space then add another set of bars between the existing sets. Give a coat of stain and the fitment can stand in any odd corner.

Washing-up Board

When we have company we often find that we have an extra lot of china to be washed up. Perhaps there is not space in the scullery for another table, so the obvious thing is to make a slide-in shelf in the window recess if you have one. If you cannot fix it there then perhaps it can be fitted near a wall with a short leg fitment as shown in separate sketch.

The board for this (shown in Fig. 2) can be $\frac{3}{4}$ in. thick or made from panel board with a 1 in. square edge, rounded at the corners. Use panel fine pins for fixing. The top could be linoleum covered to save damage from water, and if possible fix it at window level. It can, space permitting, extend out about 3 ins. from the wall or alcove.

Now for the side supports. You will require four of these, two each side, made from $\frac{3}{4}$ in. square wood well sanded.

Allow sufficient space for the board to slide in and out. Note the position of these in the separate sketch.

A Linen Trolley

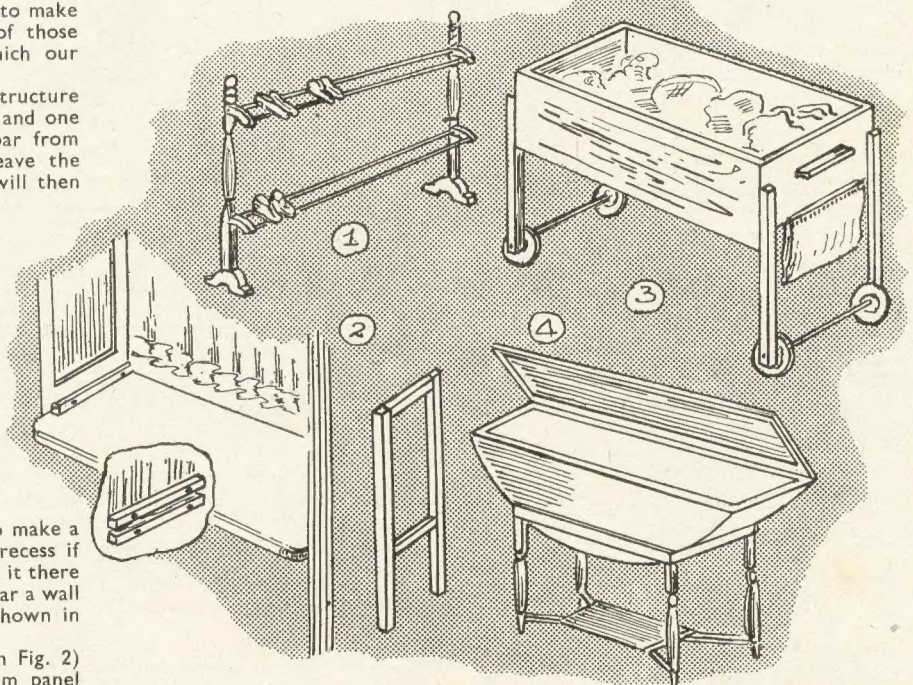
Washing day is always a hard day when it comes to carrying the wet clothes in and out of doors and chasing the peg bag. The workmanlike garden washing day trolley seen in Fig. 3 is made from a drawer from an old chest of drawers. It is cleaned up, with handles added at each end and lined with some light American cloth, put on with paste.

Legs of $1\frac{1}{2}$ in. prepared wood are added at each end and 6 in. wooden turned wheels mounted on the bottom. Large

seen these quite recently reposing outside the local secondhand dealers presumably having lost the springs and wheels. Why not turn one of these into a needlework box (see Fig. 4) for the family? It can be very useful and not unsightly.

Clean it up and fix a hinged lid with panel board with 1 in. beading all round. Line the inside with light coloured chintz or some other material. This can be pasted in with lino paste. Pad the inside of the lid and neaten round with furnishing tacks. This will do for the cotton on reels and also needles and other items.

Procure a set of table legs and join up



wheels are a great advantage on account of the undulating surface of the garden. A strong damask peg bag is added to one end and another bag the opposite end to take care of the rope clothes line.

Needlework Holder

Many families possess somewhere an old-fashioned perambulator and we have

as shown with a wooden surround at the top to take the needlework box. Fix this so the box can be removed at any time. This can be fitted with a short length of narrow beading on each side of the curved part just where it meets the surround. When the lid is closed down it will make an ideal table. (174)

Linen Basket—(Continued from page 389)

Paper can be pasted on, and should be neatly folded over to the inside of the basket and the bottom. The material can be fixed with small tacks similarly. A few yards of banding, or gimp, would look well if tacked along the top and bottom to finish off.

From any scrap bits of wood, cut two

feet with curved front edges, as shown at (F), and fix these with screws to the bottom of the basket, in the places seen in the general view of the article. At the back, screw a plain square of similar wood to act as a third foot to bring all level.

Cut a handle for the lid, to pattern at (E), and fix this at the place indicated.

The lid should fit comfortably on the basket, and if found too tight, the strips of wood attached to it underneath should be prised off and planed a little until the fit is quite satisfactory. The lid and feet of the finished article should be painted or enamelled in some pleasing colour, then the basket is ready to use.

Readers have written to us about some MORE BOTTLED MYSTERY

In our issue of December 14th, 1949 we originally published an article on The Nail In The Bottle, and this was followed by another (May 3rd, 1950) on an alternative, and in many ways an improved, method by a reader who kindly sent his ideas to us.

This novelty further seems to have inspired the ingenuity of several readers. Mr. M. Minster of Johannesburg in South Africa writes to tell us that instead of one nail, he puts *three* in, one below the other, in an extended wooden 'cork'. He does this, of course, by drilling one hole lengthways and three sideways. Mr. Minster is apparently one of those who think that if you can do a thing once, it may be just a lucky fluke. If you do it twice, it may be a coincidence, but if you do it *three* times there is something definite about it!

Another Method

Another method has come to the writer's notice, and one that has several advantages over the original model. Instead of a nail there is a wooden screw, which considerably increases the mystery. Then the stopper, instead of

Actual dimensions cannot be given as these depend on the size of the bottle. Always allow for the thickness of the glass. The interior dimensions are smaller than the outside ones.

Stopper and Shaft

The stopper, though appearing as one unit, is in three parts, and is best turned out of plastic. The stopper itself (B, Fig. 1) does not go very far into the neck of the bottle but just has a shallow rebate so that it can 'sit' on top of the bottle. The end of the shaft (A) is screwed into (B). It considerably simplifies construction and turning if the hole is taken right through (B) and then a cap (C) added. Though it adds to the work involved, it would be a great advantage if (C) were made with a screwed boss, as shown in Fig. 3.

The wood screw is not actually screwed in but is in a tapered hole. In addition to this transverse hole, another is required going the length of the rod (A) to just past the tapered hole.

Full Size Drawing

Note that the screwed part of the rod (x) is made much longer than will finally be retained. A study of Fig. 4 will show the reason: to enable a grip to be maintained on it during the insertion of the wood screw. Readers are advised to make a full-size drawing such as Fig. 4,

make sure that the tapered hole will take the screw properly).

The rod is then drawn up and the surplus screwed rod is cut off (take care that the wood screw does not drop out whilst doing this). The stopper (B) may now be screwed on.

The Needle Work

Now comes a subtle part that is unsuspected. Obtain a knitting needle or similar stiff steel rod, of such a thickness that it will slide down the central hole without any shake. The far end (which will touch the screw) is pointed. The length of this needle must be very carefully adjusted so when the cap (C) is glued or screwed on, the rod is pressed down on the wood screw (it will engage in one of the turns of the screw) and prevent it moving.

A little plastic cement should be smeared on the screws connecting parts (A) (B) and (C) so that they cannot be unscrewed by the curious who would stop at anything short of smashing the bottle to find out 'how it is done'.

A 'Ladder' Mystery

Our South African correspondent also enquires after another 'bottled mystery', this time, the ladder in a bottle. This is a tapered ladder, as shown in Fig. 5. Each rung is properly dowelled into the stiles (Fig. 7). How is it done?

As with the 'Ship In The Bottle' (the classic of bottled mysteries) there is no one way. Possibly after reading this and getting to work, readers may tell us of other methods.

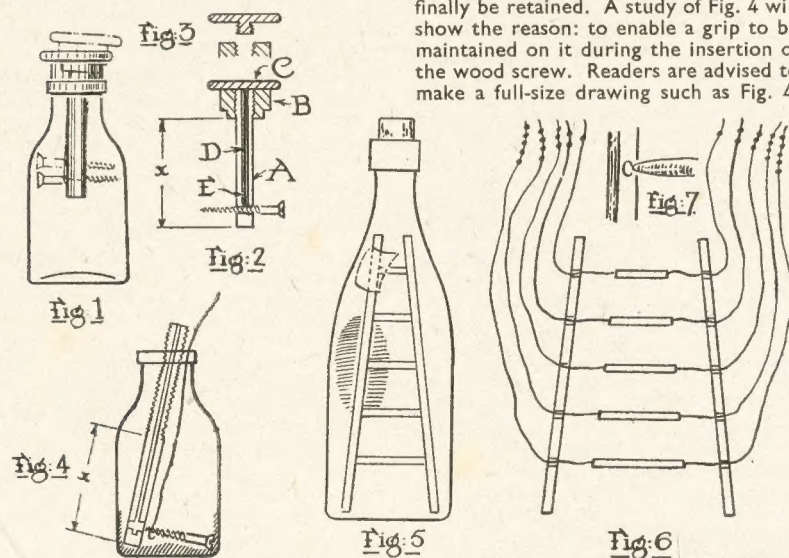
As before, the bottle should be measured for internal dimensions and the ladder made and assembled outside the bottle. The joints can be fairly easy fitting since, when the ladder is assembled inside the bottle, the bottle is filled with liquid. This causes the wood to swell and the joints get tight. If the joints are too loose, however, the model will fall apart. The rungs had best be tapered so they can have an easy start in the hole but can be pushed in tightly. Ends that project from the holes can be cut off (inside the bottle).

Rung and Thread

Each rung has a thread attached to either end. (Make a small slit with a razor blade and insert the thread). These threads run through the holes in the stiles. Note well that the threads need be much longer than shown in Fig. 6, where the threads are shown shortened for economy in drawing. It will be an immense help if each rung has a differently coloured thread. A single knot can be tied to each end of the threads for the first rung: two knots for the second, and so on.

It is a sound precaution to tie the ends of the threads to large buttons

(Continued foot of page 392)



being sealed in the neck of the bottle (which always seems a bit suspicious) is withdrawable — well, almost. (See dotted lines in Fig. 1). The wooden screw in the shaft attached to the stopper prevents complete withdrawal.

How was the screw ever driven in? The method is subtle and not at all difficult though to do it practically, requires the use of a model-maker's lathe and screw-cutting taps and dies. There must be many of our readers who are engineers, or who have such friends, whilst for others a description of the method will be interesting.

based on the bottle being used. This will enable them to find the size of the largest wood screw that can be used. Again we warn readers to allow for the thickness of the glass (shown shaded in Fig. 4).

Inserting the Screw

With the aid of a piece of wire hooked at one end, the screw may, inside the bottle, easily be inserted in the tapered hole (make sure that the taper is the right way round), and by swinging the rod, the screw may be forced into the hole. (Before doing this in the bottle,

The last of our series on bookbinding deals with DECORATED JACKETS

SOMETIMES a secondhand book is a sorry sight and smells musty enough to be worth half an hour in a slow oven to kill the offending fungi causing the smell. Even after the edges of the pages have then been rubbed with a rubber to clean them up a bit, the dilapidated cover remains to make the book an eyesore. Brown paper covers are the simplest and quickest solution to make the book fit to lodge in an open shelf, but brown paper is not very decorative.

It is possible to make much more pleasing covers with little trouble, so that instead of a drab brown the covers have instead a gay and bright pattern.

Potato blocks

The method involves block printing. Lino blocks are usable, of course, but it is possible to use ordinary potatoes to make patterns which can be quickly altered.

Once cut, lino blocks are permanent—whereas potatoes are plentiful and the patterns can be made in a minute or two. A whole print of well over a square foot may be done in half an hour. The latter time would be taken to stick a square of

blade cut one or two channels about an eighth of an inch wide and about as deep on the flat surface. Curved and straight channels and triangular nicks are easy to make. The method and result are shown at Fig. 2.

The block can be tried out on any paper without a high glaze, even newspaper will do. Mix up a good strong watercolour wash, then with a fairly dry paint brush paint over the potato and press it down firmly on the paper. Print other squares neatly about the first to be done, and thus get an idea of the sort of pattern you have made. Other cuts can be made, or if the pattern is unsatisfactory then the knife can remove the pattern with one slice, and a fresh surface is ready for another try.

You will notice that if a channel goes off the face of a block then it links up with whatever has been cut away at the same level

on the opposite side of the block. The blocks merge well and thus make good patterns if cuts are made with an eye to this linkage.

When you have decided

The type of paint known as 'Poster Colour', which is identical with distemper colourwashes, suits this method of pattern making very well, but should



Fig. 1—Designs and applications for Jackets

be used thinly.

The patterns shown below in Fig. 1 were done with this type of colour. It is possible to make many designs with one potato block. For instance printing can be carried out in a checkerboard manner, leaving alternate squares blank.

Or the block can be used shifted half a block along every row, the blocks therefore being arranged like the bricks in a wall. Sometimes good patterns can be got from an otherwise unpromising block by turning it ninety degrees each time it is set down.

When the printing is finished and the pattern is thoroughly dry then a cover can be cut out of the shape Fig. 3 and fitted on the book you wish to conceal or adorn.

If you are going to make covers for several books from the same block, all the prints should be done within a few hours—the blocks soon shrivel. If the same pattern is wanted again in the future it would be necessary to copy the pattern with a new potato. (194)

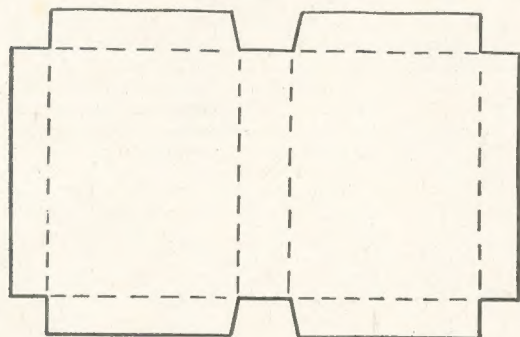


Fig. 3—Shape of finished cover paper

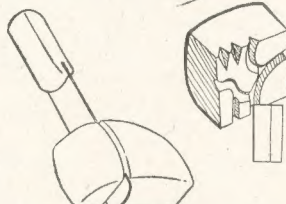


Fig. 2—Cutting and shaping the potato block

lino on a wood block ready to start a lino cut pattern. Here is how to do it.

Cut a potato in half with a flat knife, and square up one of the halves as shown to make an inch-sided surface. The potato surface can be oblong, but make sure the angles at the corners are exactly square.

With a penknife or old safety razor

on the colour, then a sheet of paper large enough for the book cover can be printed over with the design. The paper should be lightcoloured wrapping paper—brown, unless it is light, is not the best colour.

Art shops sell cheaply paper known as 'Bakers Wrapping Paper', with a cream surface, but many other equally suitable grades are available at printers' offices.

Bottled Mystery—(Continued from page 391)

(wider than the mouth of the bottle) as, in the excitement of erecting the ladder inside the bottle, one of the threads may slip inside.

Fig. 6 shows a purely diagrammatic view, though the work may appear like this if set out on a table before actually inserting in the bottle. One of the stiles is first dropped through the neck of the bottle, then each of the rungs and lastly the other stile.

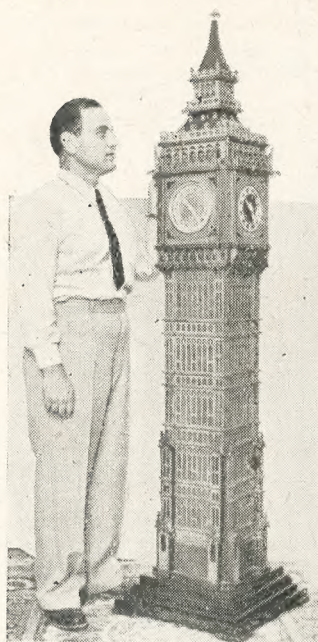
By pulling gently on the threads and with the help of a piece of wire and other improvised tools, the rungs are coaxed into their appropriate holes. Obviously, patience is needed and some skill. The beginner may try a ladder of, say, four rungs or even three, to get the 'feel' of the job.

Apart from the fun in tackling this job, and for the interest it causes amongst ones friends and relations, such ladders

in a bottle form good advertising novelties if a label bearing an advertisement is pasted to the bottle. The whole job is placed on a revolving platform in a shop window.

The bottle is filled with slightly coloured water and then firmly corked or stoppered. The ends of the cotton are removed with a piece of safety razor blade soldered to the end of a length of stiff wire.

INTERESTING MODELS IN PICTURES

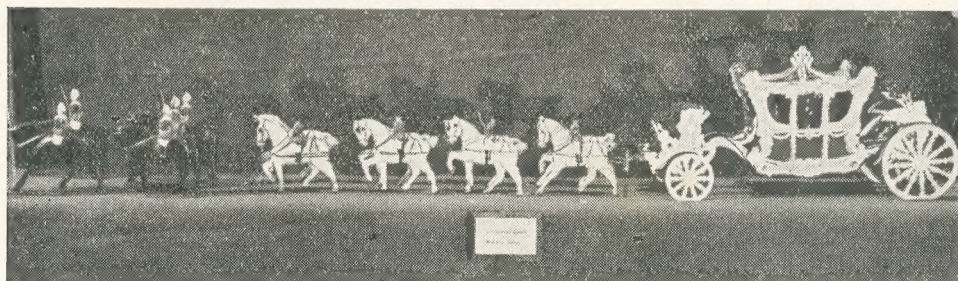
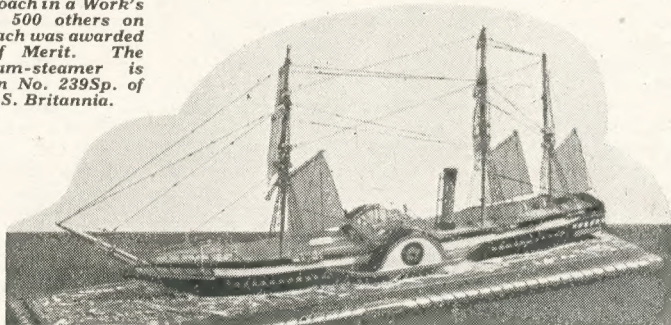


THIS Big Ben stands 6ft. 6ins. high and was turned out on a Hobbies Lathe, by S. Briffa of St. Roque's Street, B'kara, Malta. It was copied from our earlier design and is fitted with a Westminster 8-day quarter chime. Mr. Briffa, who has done other smaller models only for the last 13 months, is Petty Officer Stoker on H.M.S. Brigand.



(Photo Kettering Leader and Guardian)

THE first attempt of W. J. Lawrence of Sheldon Road, Chippenham, who entered it with a Model Stage Coach in a Work's Exhibition with 500 others on display. The Coach was awarded a Certificate of Merit. The sailing ship-cum-steamers from our Design No. 239Sp. of the famous R.M.S. Britannia.



THREE weeks of spare time went to this Coronation Coach model with its escort of Life Guards. The pre-war design of ours was completed by Mr. A. Oxley of Primrose Hill Road, Huddersfield, who has now completed five of these models, in addition to Doll's House, Railway Stock, Toys, etc.

PENSIONERS of the famous Coventry firm of Herberts Ltd. co-operated in making toys for Hospitals and here you see Mr. A. L. Goodwin of 7 Croft Road, Coventry at work. He is the proud possessor of our design No. 1 and has himself made a lot of toys for the W.V.S.



(Photo Coventry Evening Telegraph)

Keep your supplement pattern sheets in this DESIGN PORTFOLIO

MANY readers, doubtless, keep their fretwork designs for future use, and a valuable practice, too, as one never knows when a certain one may be wanted. For storing such designs there is nothing better than a portfolio, as it keeps them both flat and clean. The subject of this article shows a suitable portfolio, one just the right size for the standard designs published. As it can be made very easily and cheaply, it would be well worth the little trouble involved.

For the cardboard sides, the stouter material named strawboard could be used, but for cheapness, a double thickness of such cardboard as is used for grocers boxes, and can usually be obtained now for the asking, would serve as well. Two thicknesses of the latter should be glued together to make the sides of the portfolio strong enough.

The Sides

Cut these sides to the dimensions given in Fig. 1, and at the centre of both, glue a 12in. length of tape, as shown. A strong fastening here is necessary, and it

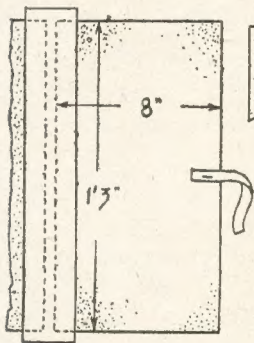


Fig. 1—The cover pieces

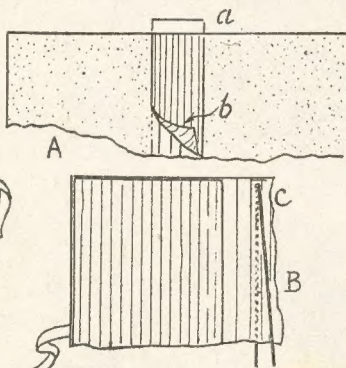


Fig. 2—Details of spine and threading

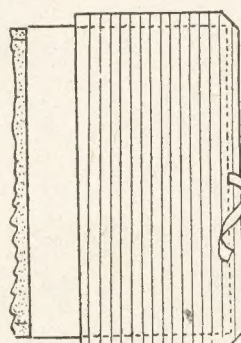


Fig. 3—Cover and tape

would be as well to strengthen the glue with either a thin wire staple or a stitch of thread.

For joining the sides together, cut a 2 1/2 in. wide strip of some suitable material, as a dark coloured linen, bookbinders cloth (if you have it), American cloth, in fact anything of a suitable nature handy. Lay the sides of the portfolio 1/2 in. apart, and glue the strip over, as in the diagram. The strip, by the way, should be long enough to extend over the ends by 1/2 in. each way.

Rub the stuff well down to the cardboard and turn the whole over. Cut a

second strip, this time a linen for preference, or strong paper, the same width as before and the length of the sides exactly, and paste this over the middle joint, as at (b), in Fig. 2A.

Rub down, then paste or glue the laps (a) down over on the inside. Now leave the work for a little while to allow the glue and paste to harden.

Covering

The next operation is to cut the outside covering material. This can be a fancy paper, bookbinders cloth, or anything that could be usefully employed, provided it is pleasing enough in appearance.

It should overlap the covers 1/2 in. at front, and top and bottom edges, and wide enough to overlap the material covering the joint by 1/2 in. Snip a piece off each corner at the front, and where the tape comes, make a scissor cut to let it through, as in Fig. 3.

Turn the paper over and paste well. Let it stand a minute or two for the paste to soak into the paper, then lay it over the sides, pull the tape through the cut, and rub the paper well down. Turn over and rub down the overlays to

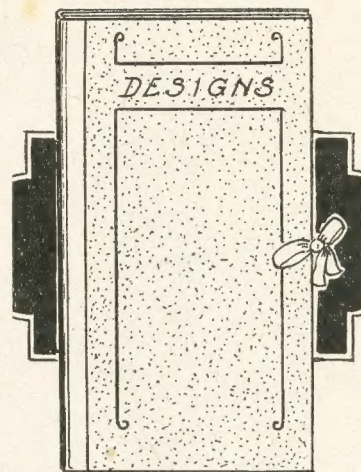
pasting paper, leave it for a minute or two before applying it to allow the paper to expand. Then, when dry, it should be taut and quite free from creases.

Open out the portfolio, and on the back cover, at spots close to the joint, and 1/2 in. down from the top and 1/2 in. up from the bottom (see (C) in diagram) make small holes through with any suitably sized sharp pointed instrument, the steel point of a dart is just about right for this job.

Through these holes thread a length of some fine coloured cord, like that known as 'macrame'. Draw tight, and tie on the inside with a neat bow. Under this the designs are drawn when inserted in the portfolio. This completes the work of construction, what we may call an evening's interesting job.

Decoration

The cover can be decorated according to the reader's ability. Probably a simple design put on with indian ink, as in the general view, would serve as well as anything and call for no artistic ability in particular. It may be added, though perhaps unnecessary, that a portfolio on the above lines, with the necessary amendments to dimensions, could be made for other things besides designs; drawings and sketches, or photographs, for example. Or even for letters you want to keep.



The Branches of Hobbies Ltd. are at LONDON—78a New Oxford St., W.C.1 (Phone MUSEum 2975); 87 Old Broad Street, E.C.2 (LONDON Wall 4375); 117 Walworth Road, S.E.17. GLASGOW—326 Argyle Street (Phone CENTral 5042). MANCHESTER—10 Piccadilly (Phone CENTral 1787). BIRMINGHAM—14 Bull Ring. SHEFFIELD—4 St. Paul's Parade. LEEDS—10 Queen Victoria Street (Phone 28639). HULL—10 Paragon Square. SOUTHAMPTON—25 Bernard Street. BRISTOL—30 Narrow Wine Street (Phone 23744).

HEAD OFFICE AND FACTORY—DEREHAM, NORFOLK.



WHAT a drab and dreary place this world would become if it became impossible to grow any more flowers. Such a calamity would affect everyone, some more than others perhaps, but we should all miss the joy of our gardens or the beauty of the colourful flower beds in our public parks and open spaces.

It is the very natural pleasure derived from gardening that has made it the most popular hobby of man and woman throughout the ages. Thanks to our horticulturists and their continued research we are able to work with assurance that our efforts with seeds and plants will yield good results in due course. It is surely this faith that impels us to devote some time each week to digging, planting, weeding, or other essential work in order that those results may be achieved.

Changing Aspects

Some folks have been able to combine or spare a portion of their ground for the cultivation of vegetables. During the 1914/18 war years every plot or piece of waste ground was carefully measured into recognized 'standard' sizes suitable for individuals who could spare time at week-ends to removing rubbish or other

how the authorities have given their blessing to clubs and societies which have been formed in villages and towns, encouraging the members to improve the soil and procure better results.

If you are a gardener or allotment



Playtime in the Garden

holder you are probably wondering what all this has to do with your other hobby, photography. Well, the camera, besides being used in almost every industry, has proved extremely useful and successful in agriculture and horticulture research and there is no doubt that a keen amateur photographer can use a few films to advantage. The author endeavours to pass on a few hints which have proved helpful to others.

Prints of Progress

It is somewhat surprising to find what a small percentage of amateur gardeners read text books or even follow explicitly the directions on a packet of seeds, but that bad habit is found among those practicing other hobbies. If you are really keen on your digging, etc. and do not mind making a few exposures with the camera, you will certainly find some value in having a selection of prints showing the progress during the season of your garden or allotment.

One print should show the ground after it has been dug over and ready for seeds. It should be mounted with a white margin on which details of the seed in each row, the brand and the date of sowing and any other detail or data which may help you to make a comparison with the next year's print. This may help you to decide that one end of the allotment is not so good for such and such a vegetable as probably the other end.

When the young plants are showing through is another good time to make an exposure and to make notes and possibly suggestions. When the time arrives for picking or cutting then a few more exposures should certainly be made.

Useful Records

To get the most satisfactory results recorded it is best to make use of a rule. For instance, if you wish to keep a record of an excellent crop of beans, pick a dozen representing a good average, pin them to a card or board and place above or below the display a 12in. rule and make the exposure. Also weigh the dozen beans on a scale and make a note of the weight.

The resulting print should have the date of picking, the weight of the dozen and if possible the total weight of the crop, whether the season was very wet or moderately so. In fact, any item of information that can be of interest.

We all know about the giant gooseberry and the 'biggest-ever' marrow but if a photograph is taken of that marrow, pumpkin, potato, bean, tomato or any other prodigy of your allotment, with a foot rule you can refute any doubt or contradiction which may arise when you happen to be comparing notes with your neighbours or friends. It would save a lot of doubtful yarns if anglers could be prevailed to take photographs with a rule placed alongside of their 'imaginary' captures.

The author worked two 'standard' size allotments for some years and had



Proof of a 28in. savoy!

accumulation likely to restrict growth and then to dig thoroughly and eventually plant vegetables easy to cultivate and which were in regular demand for the table.

What a remarkable change developed on those plots, or as they eventually became known, those allotments. From ugly places overgrown with weeds or covered with unsightly rubbish, we were able to cut fresh greens, pick our 'morning gathered' peas or beans and dig fresh potatoes as the home supply ran short.

Such an experience was bound to have a lasting effect. The result can be seen wherever there is open land or idle spots awaiting the builders. It is good to note



A fine hang of pears

the experience of growing practically every kind of useful vegetable. Knowing the value of keeping records in connection with the hobby of photography he found the same practice was well worth while with the plots and the garden.

Some seeds or plants did much better in the middle or away from the extreme

ends of the plots or even at the ends of the rows, as was very clearly demonstrated on the prints. On one particular year peas had a most remarkable run, very full and very free from pests and one outstanding note on the print states that the summer was particularly dry and it was impossible to water the crops.

The planting and also the 'pricking out' of the young seedlings is quite important and if you take a photograph do make a note of the space between each plant and whether the extra space proves more satisfactory than the shorter space of the last season.

The Flower Garden

The flower garden calls for much the same close attention regarding the actual position of individual plants. We all know that there is a 'best' bed in every garden and, of course, there is a bad one where it seems difficult to get any plants to grow let alone bloom. What about trying half-a-dozen different plants in that and taking a photograph at their flowering time. It should certainly help you in your selection for next year.

Among some gardeners there is a desire to produce blooms of exceptional large size. A friend of the author who was a keen grower of chrysanthemums for exhibition succeeded in producing some very fine specimens of white incurving species. When asked what was the width of his largest bloom and if the average size was bigger than those of any previous year he could only give an indefinite reply. Something more of a guess than anything else.

Exhibition Pictures

The writer suggested photographing the exhibition specimens before they were sent into the show and he readily agreed. The flowers had to be displayed uncut, in other words the plants were required and, of course, this meant the pots also. In order to make a successful photograph he bored a hole in the ends of a 12in. rule and fastened this to a wall.

Then by selecting three of the finest blooms the pots were arranged in such a manner as brought the blooms fairly close together. The tops of the blooms just reached or near enough to the rule to indicate their actual widths. The print was marked with all the useful data possible and corresponding photographs were made each subsequent year. It all proved an interesting and instructive collection of records for future reference.

In Public Gardens

This same idea of collecting records can be adopted for many other types of flowers and plants. In some parks and public gardens it is in common practice as regards beds of flowers as an aid to what particular flowers are best suited for any particular part of the park.

Having given a few hints on how the hobby of photography can be of service to you in the pursuit of success in growing flowers and vegetables, let us turn the tables somewhat and to show you how the garden can be of help to your photography.

When you happen to be laying out a new garden, or perhaps making some alterations in the present lay-out, have in mind the possibilities of making use of it as a place for taking some of the family portraits which amateurs are so frequently persuaded to do. You might be

A free design of A WEATHERHOUSE

This novel Old-English Weatherhouse can be made from patterns on our supplement sheet. A complete kit (No. 2864) of wood and gut is obtainable from Hobbies stockists for 4/6 or by post from Hobbies Ltd., Dereham, Norfolk, for 5/4.



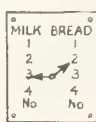
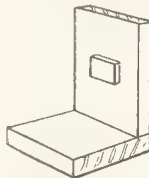
able to plan and construct something that will prove very attractive.

Background Effect

A simple illustration will bring this point home to most readers. Many back garden portraits are spoiled pictorially by having to include some wretched shed, fence or backdoor. Now if that shed had a rambling rose climbing over it or a fairly full flowering bush hiding it, and if that fence was covered with a

A Bread and Milk Clock

THIS little gadget 'set' every morning, for the milkman and baker, will relieve the housewife of the necessity of going to the door to them. How to



make the 'clock':—Cut a piece of 3-ply 5½ins. wide by 7ins. long. At one end glue another piece 5½ins. wide and 1in. thick to form the base. Pin on the other side a piece of cardboard to fit. Print clearly and screw a pair of pointers into the face, 3ins. down from the top centre to a 1in. square of 3-ply at the back, and the 'clock' is ready for use. Place in the

trellis placed so that the squares became diamond shaped, and a clematis or honeysuckle trained about it you would be sure of having two spots in the garden that would make moderately good backgrounds.

Side fences dividing one's garden from the neighbouring gardens can be very difficult at times. But a little planning and a spot of carpentering will help. Select where the best position would be for taking portraits. Then cut away sufficient of the flower bed to enable a path to turn in as a dead end to the fence. A few shovelfuls of gravel will give a finish to this but the actual completion is reached when you have made an ornamental gate painted white or light colour that can be placed against the fence whenever a photograph is wanted. This makes an excellent background piece and does make a charming break in an otherwise ugly fence.

Pictures from Above

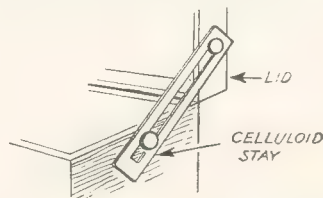
Those living in London or any other large town are sometimes prevented from making any alterations and there are times when gardens are too small or too narrow. The writer overcame this experience by making a number of exposures from the first floor back window. It, of course, meant looking down on the friends but the lawn proved a much more artistic background and the fact that the folks had to raise or tilt their heads slightly made the results rather more interesting.

Finally, make a point of studying some of the efforts of landscape gardeners. Near the author's house one has made good use of a strong imagination. In the garden, which consists of an adjoining plot to the house, there is a very artistic and ornamental bridge built over an imaginary brook, on the banks of which are lovely ferns. A few yards from this is a small pond and in a corner the tool shed very cleverly hidden and decorated with rambling roses and one or two hanging baskets of flowers.

kitchen window, set to the quantities of milk and bread required, leave rest to the tradesmen concerned.

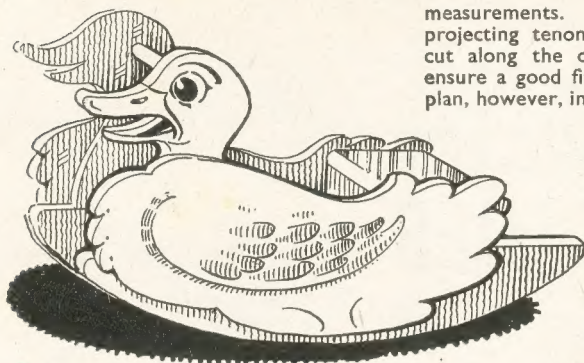
Lid Stay

A LID stay for a small box in fretwork or carpentry can be made as shown in the accompanying drawing. It can be cut with a fretsaw from brass or iron, or



any metal with the slot down the centre. One end is screwed to the lid, whilst another screw works loosely in the slotted portion.

Attractive shape and colour make a novel CHILD'S ROCKING CHAIR



THE rocking horse seems the favourite rocking toy for most of our children, but for the tiny tot we think a low type of seat with rockers attached is, perhaps, safer and just as enjoyable.

It is, therefore, of the younger folk we were thinking when we set out to design such a toy as that shown in our illustration Fig. 1. Here is a roomy seat on rockers with attractive handle-bar supports shaped and painted up to simulate a duck's head.

The Rockers

The overall length of the toy is 31ins., its height 18ins. and breadth 14ins. Commence on the rockers, for which we want two pieces of wood 30ins. long by 6ins. wide. Straight-grained pieces of $\frac{3}{4}$ in. or $\frac{7}{8}$ in. flooring board would answer well. The correct curve to suit the given length should be set out as shown in Fig. 2. A sheet of stout brown paper should be got and the top-line, with length set out on it.

Then centrally on this, that is, at 15ins. from one end, set up a centre line vertically as shown. From the bottom edge of the wood set up 24ins. on the centre line and from this point draw in the segment of the circle to form the shape of the rocker.

Next set out on the brown paper pattern the two sinkings shown, one for the head of the duck at 6ins. from the left-hand end of the pattern, and the other for the seat support. The brown paper pattern can now be reduced in size by cutting away that top part which originally showed the point from which the arc was struck. The pattern is thus made more convenient for handling and pinning down to the wood.

All the chief points of the sinkings can be pricked into the wood and afterwards connected up with pencil. For the curve, points should be pricked out along the curved line and these then connected up as before.

The next two pieces to make will be the plain supports for the seat. These are shown in Fig. 3 with the necessary

measurements. When cutting the projecting tenon piece, 3ins. by 2ins., cut along the outside of the line to ensure a good fit. It would be a good plan, however, in this respect, to set out the tenons direct from their respective open mortises before actually doing the cutting.

This also applies to the tenon on the head of the duck which is let into the rocker in a similar way. The outline and the interior lining in of the duck's head can be taken from Fig. 4, each square shown here being 2ins.

The Head Shape

Use light brown paper or white drawing paper for drawing the head and making the enlargement, then transfer this to the wood by means of carbon paper. Make two heads by using one of them as a template for drawing round in the same way as the rockers.

Note in each head the position of the $\frac{3}{4}$ in. round hole which will later be filled with the ends of cross rod which is 13ins. long and which will be securely glued in. Glue the seat supports and the heads to the rockers, making sure they lie flush with the rockers themselves. Both rockers can now be connected by nailing or screwing on the seat, a piece of $\frac{3}{4}$ in. or $\frac{7}{8}$ in. stuff 13ins. long by 6ins. wide. To stiffen up the seat connections, glued blocking pieces $\frac{3}{4}$ in. or $\frac{7}{8}$ in. square and the width of the seat could be glued underneath the seat and the rockers themselves.

side. The top edge of this board and the two top edges of the seat board should be rounded off with rasp and file and finished smooth with coarse and fine glasspaper.

Wing Shapes

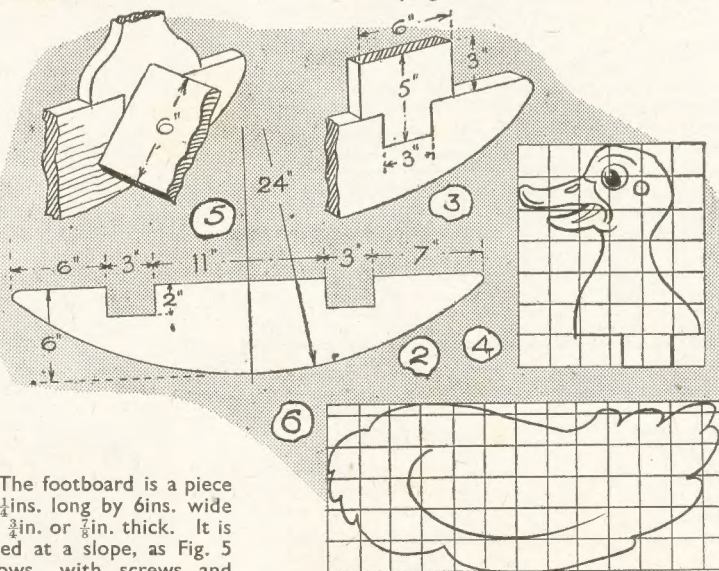
To form the sides of the rockers two outside shaped pieces are glued on. In Fig. 6 an outline of one of these sides is given, crossed with 2in. squares for easy enlargement. The 'copy' can be transferred to the wood by carbon paper. Two pieces of wood measuring 25ins. by 11ins. wide by $\frac{3}{4}$ in. or $\frac{7}{8}$ in. thick should be used. If wood of the width suggested cannot be obtained, then each side may consist of two 6in. boards glued edge-ways together.

When the boards are securely glued and pinned to the rockers and to the head and seat supports, it will be found to be perfectly stiff and rigid.

All the woodwork must, at completion, be thoroughly cleaned with glasspaper and given two coats of paint. The first will be light in colour so the finishing coat of paint or enamel may be brilliant. The whole thing may be white, relieved with grey-brown for certain wing feathers. The bird's beaks must be bright chrome and the eyes dark blue. The inside faces of the sides could well be light grey or a pale blue as relief from the outside white.

A padded cushion should be made and tied on with tapes to the seat or a permanent padded seat formed of hessian and canvas stuffed with straw or other suitable material nailed on with large brass-headed nails.

Or you can have the cushion made removable, but fitted with tapes for tying on beneath the wooden seat itself.



The footboard is a piece 11 $\frac{1}{4}$ ins. long by 6ins. wide by $\frac{3}{4}$ in. or $\frac{7}{8}$ in. thick. It is fixed at a slope, as Fig. 5 shows, with screws and glued blocks on the under-

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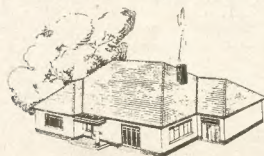
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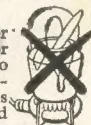


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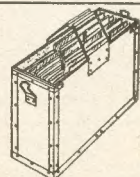
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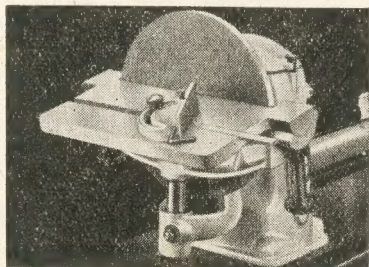
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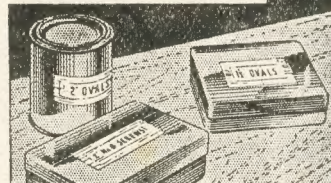


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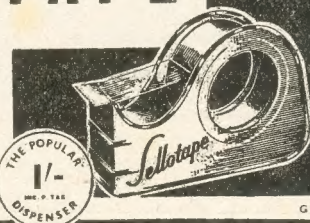
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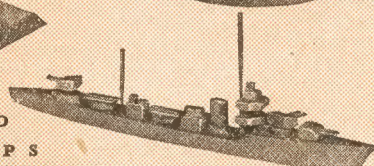
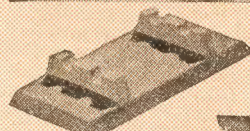
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